Preliminary Maintenance Schedule and Description of Maintenance Program Components

For Piers 30-32 and Piers 27-29

12/22/11

1.0 INTRODUCTION and OVERVIEW

An integral part of any stormwater control plan is the maintenance program to insure proper function of the stormwater control infrastructure. Stormwater control features will be constructed as part of the 34th America's Cup Races and James R. Herman Cruise Terminal project on Pier 30-32 and pier 27-29. The stormwater control infrastructure includes media filters, bioretention planters, bioretention area, rainwater harvesting, and biomedia filtration.

This outline provides a preliminary maintenance schedule and descriptions of the following maintenance program components; (1) party responsible for operating and maintaining treatment BMPs; (2) inspection and preventative maintenance requirements; (3) expected frequency of major repairs and replacement; (4) record keeping procedures; and (5) staff responsibilities and training.

This outline will be used as the basis to prepare the detailed maintenance plan to be included in the Stormwater Control Plan.

2.0 MAINTENANCE PROGRAM COMPONENTS

Following is a description of components of the maintenance program that will be included in the Stormwater Control Plan.

2.1 Responsible Party

The Port of San Francisco (the Port) owns Piers 30-32 and 27-29 therefore maintaining properly functioning infrastructure is the responsibility of the Port. For Pier 30-32 the Port may delegate inspection and maintenance of infrastructure to the America's Cup Event Authority through lease agreements. The inspection and maintenance requirements will be codified in legally binding documents such as lease agreements.

For Pier 27-29 the Port of San Francisco will own, operate, and maintain the Cruise Terminal portions of Pier 27-29 and therefore the Port will be responsible for inspection and maintenance of post construction stormwater control best management practices (BMPs). The Port may lease portions of Pier 27-29 and may delegate inspection and maintenance of infrastructure to another entity through lease agreements.

The final maintenance program included as a section of the Stormwater Control Plan will identify the entity responsible for inspection and maintenance of post construction stormwater control BMPs.

2.2 Inspection and Preventative Maintenance Requirements

Post construction stormwater BMPs for Pier 30-32 include media filters and a bioretention area. Post construction stormwater BMPs for Pier 27-29 include media filters, bioretention planters, rainwater harvesting, and biomedia filtration. Each one of these components will have inspection and preventative maintenance requirements. Additional detail and design information for each component, such as make and model of media filters and rainwater harvesting design is required to prepare the final maintenance program; however, anticipated requirements are identified below. When final design of all BMPs is complete the maintenance program will be finalized in the Stormwater Control Plan.

The following tables identify inspection and preventative maintenance requirements and a schedule of activities. The tables also identify expected frequency of major repairs and replacement.

Media Filters

Activity	Schedule
Inspect media filter surface is not clogged and that filter is draining within the design drawdown time (typically 48 hours).	Post construction and semi-annually (beginning and end of rainy season)
Inspect that storage chamber does not leak when standing water is present.	
Inspect to ensure filter bed is clean of debris and that sediment storage zone in sedimentation chamber is not more than 6 inches deep or 50% full.	Annually
Inspect grates, inlets, outlets, and overflow spillways for clogging, erosion, cracking, or water damage.	
Remove trash and debris from inlet, outlet, sedimentation chamber, filter bed, and overflow devices to prevent clogging.	Semi-annually (beginning and end of rainy season)
Remove sediment from sedimentation chamber when depth exceeds 6 inches or 50% of storage capacity.	Annually or as needed
Repair or replace damaged or clogged parts of filter fabric	As needed
If water ponds at surface for more than 48 hours, clean or replace top 2 to 3 inches of saturated/clogged filter media.	As needed (expected to be more than 3 years)
Properly dispose of contaminated sediment after cleaning – may require special disposal if contains metals, pathogens, or trace organic compounds.	

Bioretention area (Pier 30-32), Bioretention planters (Pier 27-29), and Biomedia filtration (Pier 27-29):

Activity	Schedule
After first storm event, inspect for proper drainage, erosion, and proper inlet and outlet functioning.	Post-construction
Regularly water during the first three months as vegetation establishes roots.	
Monitor vegetation to ensure successful root establishment.	Semi-annually (beginning and end of rainy season)
Trim vegetation as needed to maintain desired appearance.	Monthly or as needed
Inspect for erosion, clogging, and vegetation damage.	Semi-annually (beginning and end of rainy season)
Remove debris from inlets and outlets to avoid clogging.	
Add mulch to bare areas.	
Replace dead or diseased plants. Re-grade soil surface if erosion or scouring has occurred.	Annually
Till soil and replant if the system does not drain within the design drain time.	As needed (expected to be 3 to 5 years)

Rainwater harvesting

Activity	Schedule
Inspect that all parts are operational and not leaking.	Post construction and semi-annually (beginning and end of rainy season)
Inspect backflow prevention assemblies using a certified tester approved by the city and County of San Francisco.	Annually
Clean with non-toxic cleaner, such as vinegar.	
Clear litter and debris from drainage management area, gutters, system, and screens.	As needed
Use stored water for building operations during rainy season to ensure that storage is available for the next rain event.	

2.3 Record keeping

Written documentation of inspections and maintenance work will be kept by the entity identified in the Stormwater Control Plan as the responsible party. Reports will be kept by the responsible party and will be submitted to the Port of San Francisco as identified in the Stormwater Control Plan and lease agreements.

2.4 Staff Responsibilities and Training

The entities identified in the Stormwater Control Plan will be responsible to identify staff within their organization that are responsible for implementing the maintenance program and will be responsible for training staff to comply with all aspects of the maintenance program.